



AFCTN Report

94-115

AFCTB-ID
94-115



Technical Raster Transfer Using:



Rockwell International's Rocketdyne Division Data Supporting:



HQ AFMC/ENCT's CALS Evaluation and Integration Office



MIL-STD-1840A & MIL-STD-1840B

MIL-R-28002A (Raster)

Quick Short Test Report

17 August 1994



Prepared for
Electronic Systems Center
Air Force CALS Program Office
HQ ESC/AV-2
4027 Colonel Glenn Hwy Suite 300
Dayton OH 45431-1672

DTIC QUALITY INSPECTED 1

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

19960408 026

AFCTN Test Report
94-115

AFCTB-ID
94-115

Technical Raster Transfer
Using:
Rockwell International's Rocketdyne Division Data
Supporting:
HQ AFMC/ENCT's CALS Evaluation and Integration Office

MIL-STD-1840A & MIL-STD-1840B
MIL-R-28002A (Raster)

Quick Short Test Report

23 August 1994

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact
Gary Lammers
(513) 427-2295

AFCTN Contact
Mel Lammers
(513) 427-2295

DISCLAIMER

This document was prepared as an account of the work sponsored by the Air Force. Neither the United States Government, the Air Force, nor any of their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, nor represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the Air Force. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the Air Force, and shall not be used for advertising or product endorsement purposes.

Available to the public from the
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

This report and those involved in its preparation do not endorse any product, process, or company stated herein. Use of these means by anyone does not imply certification by the Air Force CALS Test Network (AFCTN).

Air Force CALS Test Bed

Notification of Test Results

17 August 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

Rockwell International's Rocketdyne Division

Identified as follows:

Title:	Technical Raster Transfer
Program:	CALS Evaluation & Integration Office
Program Office:	HQ AFMC/ENCT
Contract No.:	N/A
QSTR No.:	AFCTB-ID 94-115

Received on the following media: **Electronic Transfer**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A & 1840B	Pass
Standard:	
MIL-STD-1840A & 1840B	Pass
Media Format:	
MIL-D-28000A IGES:	N/A
MIL-M-28001B SGML:	N/A
MIL-R-28002A Raster:	Pass
MIL-D-28003 CGM:	N/A

Formal results with associated disclaimer are documented and available from the AFCTB.

Air Force CALS Test Bed
HQ ESC/AV-2P
4027 Colonel Glenn Highway, Suite 300
Dayton, OH 45431-1672
Phone: 513-257-3085 **FAX: 513-257-5881**

Contents

1. Introduction.....	1
1.1. Background.....	1
1.2. Purpose.....	2
2. Test Parameters.....	3
3. 1840A & 1840B Analysis.....	5
3.1. External Packaging.....	5
3.2. Transmission Envelope.....	5
3.2.1. Tape Formats.....	5
3.2.2. Declaration and Header Fields.....	5
4. IGES Analysis.....	5
5. SGML Analysis.....	5
6. Raster Analysis.....	6
7. CGM Analysis.....	7
8. Conclusions and Recommendations.....	8
9. Appendix A - Tapetool Report Logs.....	9
9.1. MIL-STD-1840A Data Set.....	9
9.1.1. Tape Catalog.....	9
9.1.2. Tape File Set Validation Log.....	10
9.2. MIL-STD-1840B Data Set.....	13
9.2.1. Tape Catalog.....	13
9.2.2. Tape File Set Validation Log.....	14

10. Appendix B - Detailed Raster Analysis.....	17
10.1. File D001R001.....	17
10.1.1. Output CADLeaf.....	17
10.2. File D001R002.....	18
10.2.1. Output CADLeaf.....	18
10.3. File D001R003.....	19
10.3.1. Output CADLeaf.....	19
10.4. File D001R004.....	20
10.4.1. Output CADLeaf.....	20
10.5. File D001R005.....	21
10.5.1. Output CADLeaf.....	21
10.6. File D001R006.....	22
10.6.1. Output CADLeaf.....	22

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840B, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Rocketdyne's (a division of Rockwell Int'l) interpretation and use of the CALS standards in transferring technical Raster data. Rocketdyne used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff using an electronic transfer to the internet server.

Two file sets were transmitted for this test, an 1840A and an 1840B data set.

2. Test Parameters

Test Plan: AFCTB 94-115

Date of Evaluation: 23 August 1994

Evaluator:
George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data Originator:
Betty Boyadjian
Rocketdyne Division, Rockwell International
6633 Canoga Ave M/S AB41
Canoga Park, CA 91304
(818) 586-4934

Data Description:
Technical Raster Test (2)
1 Document Declaration file
6 Raster files

Data Source System:
1840
HARDWARE
SUN
SOFTWARE
AFCTN Tapetool 2.0B
AFCTN Tapetool 1.2.10

Raster
HARDWARE
SUN
SOFTWARE
SPICER IMAGEnation VME

Evaluation Tools Used:

MIL-STD-1840B (TAPE)
PC 486/50

AFCTN *Tapetool v1.2.10 DOS*
AFCTN *Tapetool v2.0.0 (1840B)*

MIL-R-28002 (Raster)
HP 735

AFCTN *xrastb.hp*
InterCAP *X-Change v7.82*
Carberry *CADLeaf v4.0*

SGI Indigo2
AFCTN *xrastb.sgi*
IGES Data Analysis (IDA) *CALSView*

SUN SparcStation 2
IDA *IGESView v3.0*

PC 486
AFCTN *validg4*
IDA *IGESView Windows*
Inset Systems *HiJaak Pro*
Expert Graphics *RxHighlight v1.0*

**Standards
Tested:**

MIL-STD-1840B
MIL-STD-1840A
MIL-R-28002A

3. 1840A & 1840B Analysis

3.1 External Packaging

The files arrived at the Air Force CALS Test Bed (AFCTB) via an electronic transfer to the internet server. No physical media was exchanged or evaluated.

3.2 Transmission Envelope

The electronic transfer received by the AFCTB contained MIL-STD-1840B and MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

No tape was evaluated.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file or data file headers of either file set. This portion of the electronic transfers meets the requirements defined in CALS MIL-STD-1840A and MIL-STD-1840B.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included in this evaluation.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included in this evaluation.

6. Raster Analysis

Each transfer set contained six Raster files from a MIL-STD-1840A and MIL-STD-1840B data package. The Raster files were compared and found to be exact matches. The Raster evaluation was done using the MIL-STD-1840A data files.

The procedure used to create these files at Rocketdyne was as follows:

Original engineering drawing created using CATIA. These files were then output as HPGL files. These files were converted to CCITT G4 files using SPICER *IMAGEnation* VME. The 1840A output was generated using the AFCTB Tapetool v1.2.10. The 1840B output was generated using the AFCTN Tapetool V2.0.0. The 1840B header contained additional fields, which are not currently supported by the AFCTB Raster test tools; *xrastb* and *validg4*. All evaluations of the Raster files were done using the MIL-STD-1840A data set.

The 1840A files were read into the AFCTN *xrastb.sgi* viewing utility. No problems were encountered. It was noted that the decompressed file sizes were 10-15 megabytes. Files this large may cause problems in some systems with limited memory. The image quality was excellent. All text could be read. The SUN Sparc version of the software would not display the image due to lack of memory.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The Raster files were read into Carberry's *CADLeaf* software without a reported error. All images were displayed and printed from this utility. In order to make the images acceptable, only a small section of the images could be displayed and printed.

The files were read using IDA's *CALSVIEW* without a reported error.

The files were read into IDA's *IGESView* without a reported error.

The files were read into Inset Systems' *HiJaak for Windows*. Because of the size of the files and available memory on the PC, error messages were displayed indicating a lack of memory to process the files.

No errors were reported while using InterCAP's *X-Change*. The images appeared correctly. The text size was very small, making it necessary to use the zoom function in order to view it.

The Raster files were imported into Expert Graphics' *Rx-Highlight* and displayed without any reported errors. The images were enlarged and all text was legible.

The six Raster files in these transfer sets meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafiles (CGMs) were included in this evaluation.

8. Conclusions and Recommendations

The CALS Document Declaration file and data file headers were correct. This portion of the electronic transfers meet the CALS MIL-STD-1840A and MIL-STD-1840B requirements.

The Raster files meet the CALS MIL-R-28002A specification.

The electronic transfer sets submitted by Rocketdyne conform to the CALS MIL-STD-1840A and MIL-STD-1840B requirements.

9. Appendix A - Tapetool Report Logs

9.1 MIL-STD-1840A Data Set

9.1.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (O)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information
ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange
ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sun Aug 21 12:05:29 1994

MIL-STD-1840A File Catalog

File Set Directory: C:\TT\SET013

Page: 1

File Name	File Type	Record			Selected/ Extracted
		Format/ Length	Block Length	Length/Total	
D001	Document Declaration	D/00256	02048/000000		Extracted
D001R001	Raster	F/00128	02048/000000		Extracted
D001R002	Raster	F/00128	02048/000000		Extracted
D001R003	Raster	F/00128	02048/000000		Extracted
D001R004	Raster	F/00128	02048/000000		Extracted
D001R005	Raster	F/00128	02048/000000		Extracted
D001R006	Raster	F/00128	02048/000000		Extracted

Catalog Process terminated normally.

9.1.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (O)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Sun Aug 21 12:05:30 1994

MIL-STD-1840A File Set Evaluation Log

File Set: SET013

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: Rockwell Intl, Rockwell Intl, 6633 Canoga Ave, Canoga Park, CA 91303

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19940819

dstsys: CALS Evaluation and Integration Office, %CALS Digital Standards Office, HQ AFMC/ENCT, Wright-Patterson AFB, OH 45433-50

dstdocid: Engineering Drawing #R0018020

dstrelid: NONE

dtetrn: 19940819

dlvacc: NONE

filcnt: R6

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: SSME Manifold, Details and Views

Found file: D001R001

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

dstdocid: Engineering Drawing #R0018020

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

rtype: 1

rorient: 000,270

rpelcnt: 015051,005422

rdensy: 0300

notes: NONE

Found file: D001R002

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
notes: NONE

Found file: D001R003

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
notes: NONE

Found file: D001R004

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
notes: NONE

Found file: D001R005

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE

```
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
notes: NONE
```

Found file: D001R006

```
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
notes: NONE
```

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

9.2 MIL-STD-1840B Data Set

9.2.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 2.0; Release 1 (C)

Standards referenced:

MIL-STD-1840B (1992) - Automated Interchange of Technical Information
ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sun Aug 21 13:19:12 1994

MIL-STD-1840B File Catalog

File Set Directory: C:\TAPEB\SET003

Page: 1

File Name	File Type	Record			Selected/ Extracted
		Format/ Length	Block Length	Length/Total	
D001	Document Declaration	F/00128	02048/000000	Extracted	
D001R001	Raster	F/00128	02048/000000	Extracted	
D001R002	Raster	F/00128	02048/000000	Extracted	
D001R003	Raster	F/00128	02048/000000	Extracted	
D001R004	Raster	F/00128	02048/000000	Extracted	
D001R005	Raster	F/00128	02048/000000	Extracted	
D001R006	Raster	F/00128	02048/000000	Extracted	

Catalog Process terminated normally.

9.2.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 2.0; Release 1 (C)

Standards referenced:

MIL-STD-1840B (1992) - Automated Interchange of Technical Information

Sun Aug 21 13:19:12 1994

MIL-STD-1840B File Set Evaluation Log

File Set: SET003

Found file: D001

version: MIL-STD-1840B, 0, 19921103

srcsys: Rockwell Intl, 6633 Canoga Ave, Canoga Park, CA 91303

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

srcrelid: NONE

chglvl: ORIGINAL, 0, 0, 19940819/1032:54

dteisu: 19940819/1032:54

dstsys: CALS Evaluation and Integration Office, %CALS Digital Standards Office, HQ

AFMC/ENCT, Wright-Patterson AFB, OH 45433-50

dstdocid: Engineering Drawing #R0018020

dstrelid: NONE

dtetrn: 19940819/1032:54

dvacc: NONE

filcnt: R6

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: IBM VM CATIA 3.2.6 Drawing

docttl: SSME Manifold, Details and Views

transacttyp: PRODUCT DATA

Found file: D001R001

specversion: NONE

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

dstdocid: Engineering Drawing #R0018020

moduleid: NONE

dtype: 1

rorient: 000,270

rpelcnt: 015051,005422

rdensy: 0300

didid: NONE

doccls: UNCLASSIFIED

notes: NONE

Found file: D001R002

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdenssty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R003

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdenssty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R004

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdenssty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R005

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE

```
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE
```

Found file: D001R006

```
specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensy: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE
```

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840B File Set Evaluation Complete.

10. Appendix B - Detailed Raster Analysis

10.1 File D001R001

10.1.1 Output CADLeaf

ACCUMULATION.

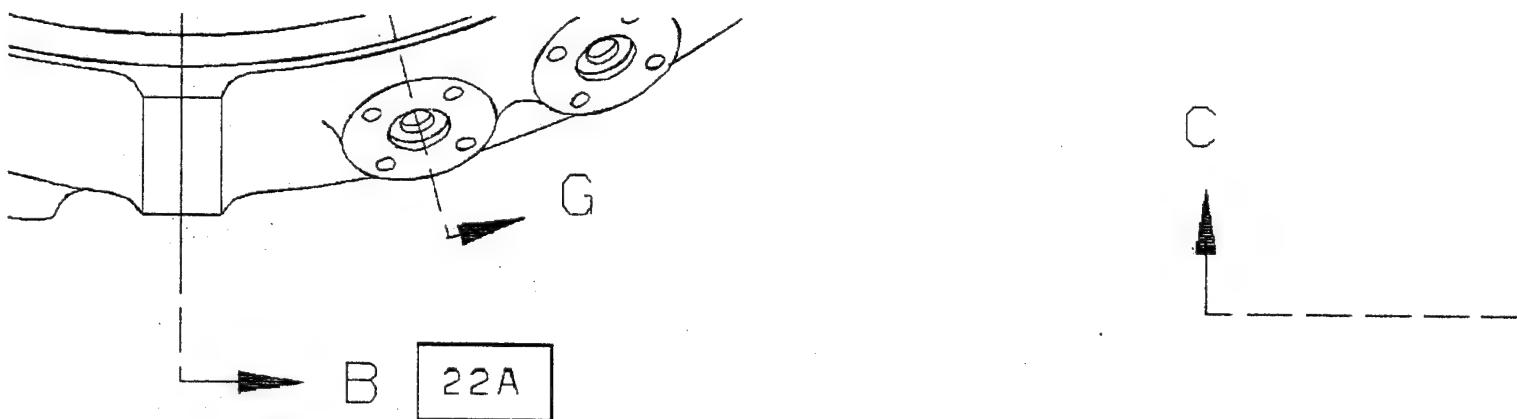
COORDINATE WELD FITUP RE
UEL BOWL LINER DWG ROC
UEL BOWL FAIRED INLETS

BLEND WELD SMOOTHLY WIT
SURFACES. NO NOTCHES OF
PERMISSIBLE. . 10 RADIUS

CRITICAL GSE INTERFACE

10.2 File D001R002

10.2.1 Output CADLeaf



111, -331

121, -261

01	(- 1*3)	SHELL	1	REQD.	ON	- 481
91, -281	(- 1*7)	SHELL	1	REQD.	ON	- 471
61	(- 1*3)	SHELL	1	REQD.	ON	- 461
51	(- 1*7)	SHELL	1	REQD.	ON	- 441
11, -131	(- 1*3)	SHELL	1	REQD.	ON	- 491
01, -121	(- 1*9)	SHELL	1	REQD.	ON	- 321, - 341 - 361, - 401
11, -141						



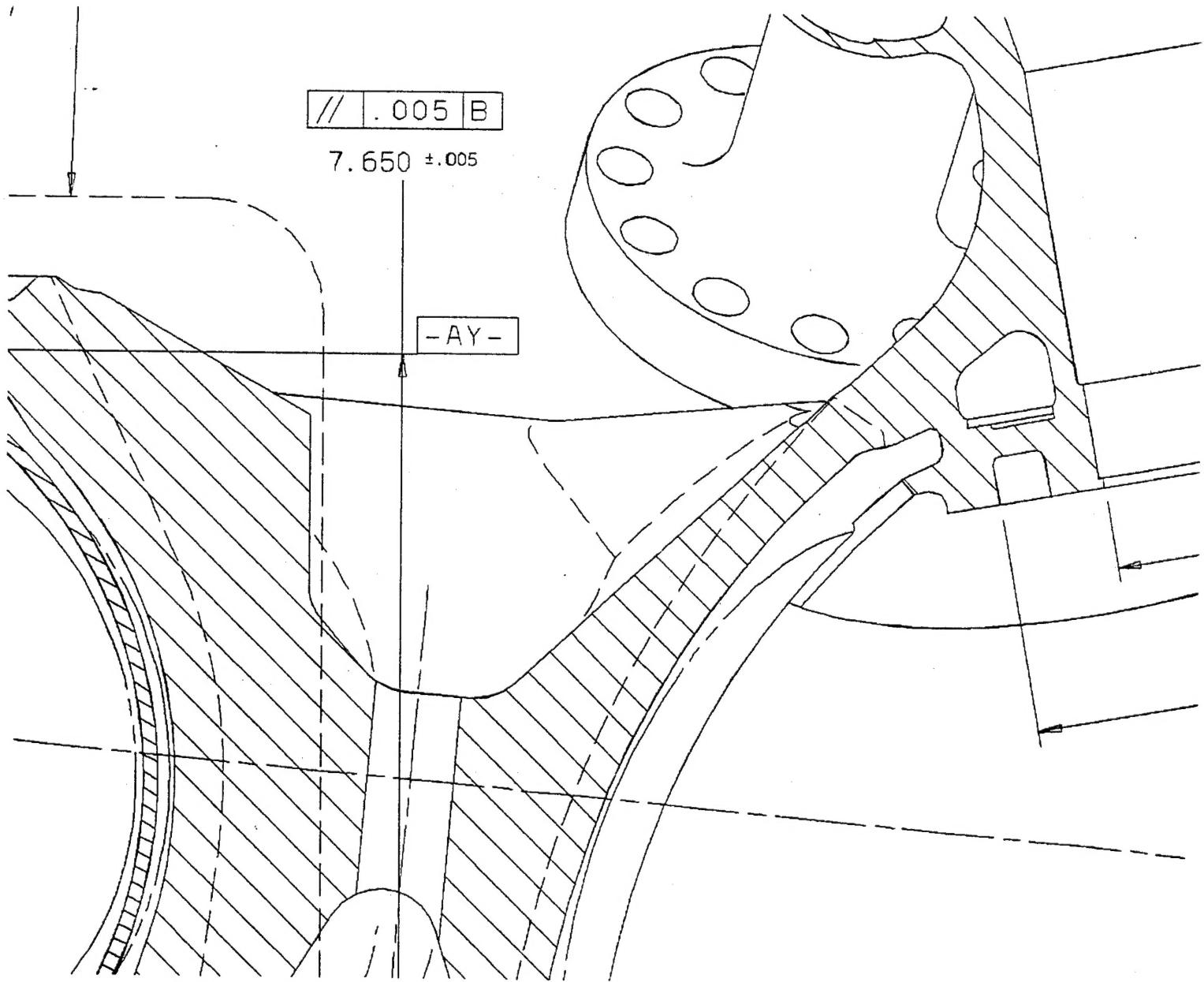
1

— CG1D REF.

0010 000

10.3 File D001R003

10.3.1 Output CADLeaf



10.4 File D001R004

10.4.1 Output CADLeaf

FLAT BOTTOM TAF
V Ø.560 X 90°
.5625-18 UNJF-

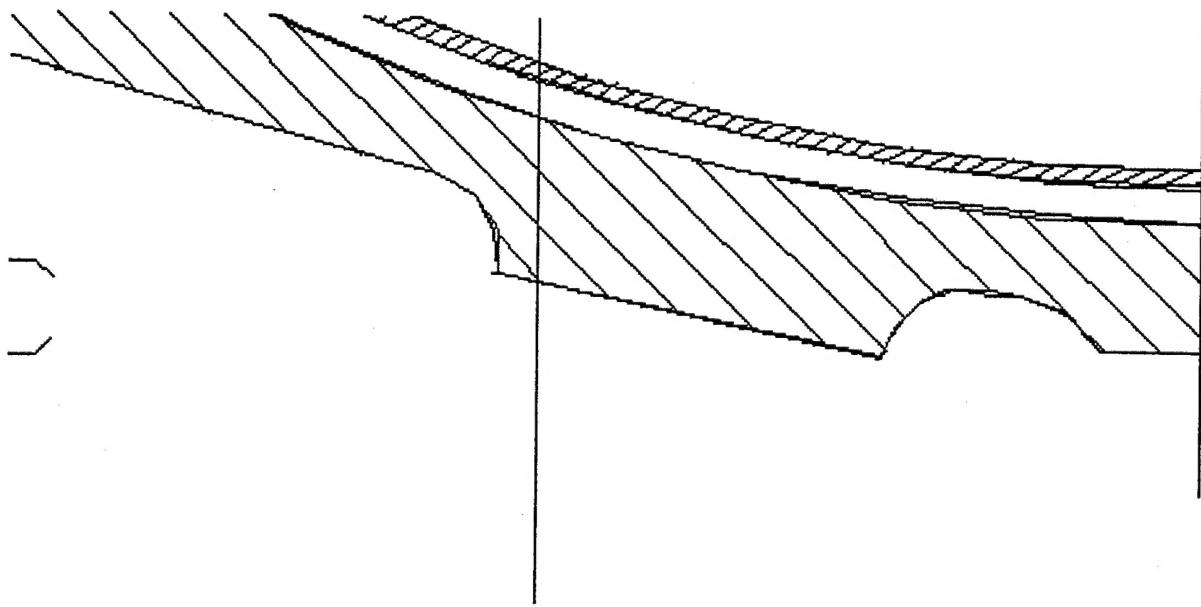
PD .5264 +.00/-
-.000

PER MIL-S-887C

1.15 MIN FULL
60 HOLES EQ SF

10.5 File D001R005

10.5.1 Output CADLeaf



10 MIN GAP TO BE
MAINTAINED DURING
WELD FITUP.
2 PL ALL AROUND

10.6 File D001R006

10.6.1 Output CADLeaf

POINT A IS CENTER OF MATI
URFACE AND $\phi 3.550$ ON ROO
NLET FLANGE

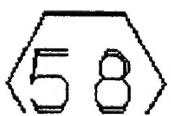


RD111-4009-6836 B6



RD153-5004-1008 W,

RD153-1002-0008 W,



RD114-8014-0008 NI